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| 10/802,838 | 03/18/2004 | Shuichi Kawama | 1248-0704P | 4256 |
| 2292 | 7590 | 06/01/2007 | EXAMINER | |
| BIRCH STEWART KOLASCH & BIRCH | | | PERILLA, JASON M | |
| PO BOX 747 | | | ART UNIT | |
| FALLS CHURCH, VA 22040-0747 | | | PAPER NUMBER | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/802,838

Applicant(s)

KAWAMA ET AL.

Examiner

Jason M. Perilla

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 March 2004 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-11 are pending in the instant application.

Information Disclosure Statement

2. The information disclosure statements (IDS) submitted on March 18, 2004 and April 13, 2005 are in compliance with the provisions of 37 CFR § 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Claim Objections

3. Claim 4 is objected to because of the following informalities:

Regarding claim 4, in lines 4-5, there is no antecedent basis for "the resistor which is connected to the input stated of the amplifier".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. Claims 3, and 5-11 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 3, the limitation including "an amplifier which shows a strong 1/f noise reduction effect" is not definite. Even in light of the specification, the meaning of "a strong 1/f noise reduction effect" could not be definitely determined by one having ordinary skill in the art. There is no indication as to what the variable "f" is to represent in the claims or specification.

Regarding claims 5, 8, and 11, the claims are rejected as being based upon a rejected parent claim.

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Regarding claims 9-11, the claims are indefinite because one skilled in the art is unable to determine what characterizes a frequency as a "low to intermediate frequency", and it makes the claim indefinite.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3 and 6-11 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Azuma et al ("Embedded Anti-Aliasing in Switched-Capacitor Ladder Filters With Variable Gain and Offset Compensation", IEEE Journal of Solid-State Circuits, Vol. 37, No. 3 March 2002, Pages 349-356; 3/18/04 IDS Paper Reference – hereafter "Azuma") in view of Bonaccio et al (U.S. Pat. No. 6034568; hereafter "Bonaccio").

Regarding claim 1, Azuma discloses, according to figure 1 on page 350, a switched capacitor filter having an anti-aliasing function, comprising: integration circuits of multiple stages, each having an amplifier and a switched capacitor, and wherein an integration circuit of at least a first stage of the integration circuits of multiple stages has a resistor. Azuma does not explicitly disclose that at least one of the integration circuits includes a bipolar transistor. However, it is notoriously known in the art that the operational amplifiers of Azuma (fig. 1, refs. 1-3) may be constructed of, for instance, bipolar transistors or field effect transistors (FET). Furthermore, Bonaccio teaches that

"FET-input operational amplifiers suffer from larger initial offsets and much larger drifts of offset voltage with temperature deviations than do bipolar transistor operational amplifiers." (col. 5, lines 35-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time which the invention was made to use bipolar transistor amplifiers as taught by Bonaccio as of the operational amplifiers of Azuma because they provide lower initial offsets and temperature drifts.

Regarding claim 2, Azuma in view of Bonaccio disclose the limitations of the claim as applied to claim 1 above. Furthermore, one skilled in the art, in accordance with Bonaccio's teaching, would choose operational amplifiers comprised completely of bipolar transistors as they are well known in the art.

Regarding claim 3, notwithstanding the rejection under 35 U.S.C. § 112 applied above, Azuma in view of Bonaccio disclose the limitations of the claim as applied to claim 1 above. Further and more specifically, the strong $1/f$ noise reduction technique is achieved in the combination of Azuma in view of Bonaccio at least as well as it is achieved in the embodiment of the instant application because it is achieved in the same manner. Namely, by using a bipolar transistor input operational amplifier.

Regarding claim 6, Azuma in view of Bonaccio disclose the limitations of the claim as applied to claim 1 above. Further, Azuma discloses that the switched capacitor filter is provided on a single substrate (pg. 354, "TEST RESULTS"; fig. 14).

Regarding claim 7, Azuma in view of Bonaccio disclose the limitations of the claim as applied to claim 2 above. Further, Azuma discloses that the switched capacitor filter is provided on a single substrate (pg. 354, "TEST RESULTS"; fig. 14).

Regarding claim 8, Azuma in view of Bonaccio disclose the limitations of the claim as applied to claim 3 above. Further, Azuma discloses that the switched capacitor filter is provided on a single substrate (pg. 354, "TEST RESULTS"; fig. 14).

Regarding claim 9, Azuma in view of Bonaccio disclose the limitations of the claim as applied to claim 1 above. Further, Azuma discloses that the filter is used in an intermediate frequency band section of a digital wireless receiver (pg. 349, "INTRODUCTION").

Regarding claim 10, Azuma in view of Bonaccio disclose the limitations of the claim as applied to claim 2 above. Further, Azuma discloses that the filter is used in an intermediate frequency band section of a digital wireless receiver (pg. 349, "INTRODUCTION").

Regarding claim 11, Azuma in view of Bonaccio disclose the limitations of the claim as applied to claim 3 above. Further, Azuma discloses that the filter is used in an intermediate frequency band section of a digital wireless receiver (pg. 349, "INTRODUCTION").

7. Claim*** rejected under 35 U.S.C. § 103(a) as being unpatentable over Azuma in view of Bonaccio, and in further view of Min et al (U.S. Pat. No. 6515489; hereafter "Min").

Regarding claim 4, Azuma in view of Bonaccio disclose the limitations of claim 2 as applied above. Further, Azuma discloses that the input stage amplifier (fig. 1, ref. 1) has an input resistor (fig. 1, ref. R_{a0}). Azuma in view of Bonaccio do not explicitly disclose that the amplifier whose input stage includes the bipolar transistor has an input

impedance that is greater than a resistance of a resistor which is connected to the input stage of the amplifier. However, one skilled in the art is notoriously aware that, ideally, an operational amplifier would have an infinite input impedance and Min suggests such common characteristic of an amplifier (col. 4, lines 25-35). Therefore, although the input operational amplifier of Azuma in view of Bonaccio is not explicitly disclosed as having a higher input impedance than that of their input resistor, it is inherent, implied, or at least obvious to one having ordinary skill at the time the invention was made that the input impedance of the operational amplifier would be higher than that of its input resistor.

Regarding claim 5, Azuma in view of Bonaccio disclose the limitations of claim 3 as applied above. Further, Azuma in view of Bonaccio, and in further view of Min disclose the remaining limitations of the claim as applied to claim 4 above.

Allowable Subject Matter

8. No claims are allowed.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following prior art of record not relied upon above is cited to further show the state of the art with respect to switched capacitor filters.

U.S. Pat. No. 4498063 to Makabe et al.

U.S. Pat. No. 7132881 to Adan.

U.S. Pat. No. 5760728 to May et al.

U.S. Pat. No. 6169440 to Liu.


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U.S. Pat. No. 4988952 to Sevastopoulos et al.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason M. Perilla whose telephone number is (571) 272-3055. The examiner can normally be reached on M-F 8-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh M. Fan can be reached on (571) 272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Jason M. Perilla
May 23, 2007

jmp


CHIEH M. FAN
SUPERVISORY PATENT EXAMINER